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North Carolina A&T State University
School of Agriculture and
Environmental Sciences
Newsletter
www.ag.ncat.edu

December 2010 • Vol. IX, No. 6

Peanut "better" gets another boost forward

SAES FOOD SCIENTISTS are continuing in their quest to make allergen-free foods available to consumers in the foreseeable future.

A new $500,000 grant from the United States Department of Agriculture to the Center for Excellence in Post-Harvest Technologies will fund expanded research and clinical trials in collaboration with the University of North Carolina at Chapel Hill. In addition to continuing work on allergen-free peanuts, the team led by Dr. Mohamed Ahmedna will attempt to adapt the technology to deactivating allergy-causing proteins in wheat products. (Important note: This wheat allergy research should not be confused with gluten intolerance or Celiac disease.) The grant was awarded under USDA's Agricultural and Food Research Initiative (AFRI).

Ahmedna

The funding will bring the research closer to the marketplace because it will enable studies to be conducted on consumer acceptability and functionality of peanuts. If results from clinical trials on human volunteers are favorable, taste testing panels will be conducted at A&T's sensory testing laboratory. Researchers will also document how the treated peanut and wheat products will function in food processing. Both these steps are essential in developing commercially viable food products.

The project illustrates the A&T School of Agriculture and Environmental Sciences' three-fold, land-grant mission to prepare students for technical professions, find solutions to problems confronting agribusiness, and ultimately implement them for the benefit of the public.

"Peanuts are an important crop in North Carolina and in developing nations, which is why we originally embarked on this project six years ago," said Ahmedna, A&T food science professor and lead scientist for the project. "In that time, A&T has significantly expanded its capabilities in post-harvest research to the point where we can develop products for enhanced safety and nutrition for our industry partners. In the process, we are educating future scientists to address emerging issues in agriculture, such as food safety, obesity and agricultural productivity."

"We are educating future scientists who are capable of addressing emerging issues in agriculture, such as food safety, obesity and improved agricultural productivity." *— Dr. Mohamed Ahmedna*

A&T made international headlines with its announcement in 2007 that it had developed the patent-pending, food-grade treatment to inactivate allergy-causing proteins in harvested whole peanuts, without significantly altering taste or texture. The new funding from USDA means research will continue, for the benefit of food industries, farmers worldwide and consumers.

Dr. Mac's Moment

In 2011, The Cooperative Extension Program at N.C. A&T will celebrate the 25th anniversary of Small Farms Week. This event started as an opportunity to bring attention to the work being done by the thousands of small farmers in this state. We use this time to highlight and showcase various innovative and profitable farming methods, and to market the numerous programs offered by Cooperative Extension in North Carolina.

One key piece of the celebration has been naming a small farmer who is doing innovative, creative and profitable work. In the past we've told you about Stanley Hughes and his forays into organic vegetables and free-range chickens. You heard about Alex Hitt who has branched off into cut flowers, and just last year we told you about Joe Thompson and his prawn operation. There are dozens of others, many who've gone on to travel this state and this nation, sharing their experiences – good and bad – with other producers.

We want to make this upcoming 25th anniversary celebration a golden – or should I say, silver – event. We are working with various entities across the state, asking them to join us as we salute the work done by this state's small farmers.

If we've asked for your support in the past, I look forward to your participation growing bigger and better this year. If we haven't gotten to you, don't feel left out. There is still room at the table for you. Call Dr. M. Ray McKinnie at 336.334.7956 and he can explain to you the various levels of support where you can help us plan this 25th celebration.

Small farmers and the work they do are key to this state's economy. Agriculture is a $74 billion industry in North Carolina and a recent article indicated that while manufacturing has faltered, food producers are expanding and investing. They are keeping North Carolina on the move and we want to help them, so that we all remain *on the move.*

— Dr. Donald McDowell
Interim Dean, School of Agriculture & Enviironmental Sciences

Undergraduate research program spurs passion for science

FAR FROM BEING "blinded by science," SAES students are gaining deeper insight into this challenging and rewarding enterprise. That's thanks to the school's new Undergraduate Research Scholars Program, which is the latest in the SAES's expanding repertoire of experiential learning opportunities.

Scientific curiosity is rewarding, once you know how to find the answers, the new undergraduate researchers report.

"This has really opened my eyes," said Jason Shelton, a soil sciences major. "I've always wondered, 'What is the proper way to do research? How do scientists know? How do they validate it?' Without knowing the procedure, you have to take it at face value."

A course in research methodologies, taught by Dr. Benjamin Gray, a rural sociologist, has been especially helpful, Shelton said. The course is the starting place in the two-year program that leads students to develop their own independent research project, then gather data, then publish, and finally present their findings to the scientific community at professional conferences.

"He taught us no matter what someone presents, it's not a bad thing to question, 'Why?' It opens further study. Science is an ongoing process," said Shelton, who is researching the effects of carbon on soil microorganisms.

As an agribusiness major, Jazmine Bowser observes that research is not all laboratories and beakers. Her examination of the impact of organic farming on the economy of North Carolina is more about census data, surveys and statistics. "I'm on the social sciences research side, so it's getting out there and digging for information, and applying statistics to information," she said.

Pioneering the SAES Undergraduate Research Scholars Program are (standing, from left) Kaya Feaster, Jasmine Bowser and Jason Shelton, and Adrienne Goode, seated.

For Adrienne Goode the undergraduate research journey has as much to do with finding answers in animal sciences as it does to discovering her own abilities.

"There are so many unanswered questions. It's exciting going on a journey to find the answers. And it's exciting because it has helped me discover talents I didn't know I had," said Goode, an animal sciences major who is researching enzymes in animal feed. Thanks to her new confidence, she says her lifelong dream of becoming a veterinarian now appears within reach.

"This has made me want to give 100 percent. It makes me say, 'Let me hurry up and finish school.' I can't wait."

Four juniors or seniors a year are accepted into the competitive program, which is in keeping with the SAES's ongoing effort to expand opportunities for hands-on learning through internships, cooperative learning and research.

"The best teacher is experience," said Dr. Donald McDowell, the SAES's interim dean. "As a land-grant university, one of our core missions is to serve our science-driven, knowledge-based society by preparing scientists to meet its needs. One way we do so is through experiential learning."

The purpose of the program is also to inspire more students to continue their educations at the graduate level and beyond, he said. Judging from the response of Kaya Feaster, that purpose seems to have been achieved.

"Before, I was thinking about it, but now that I'm in it, I'm definitely going to go to graduate school," said Feaster, a food sciences major who is planning to research the use of plant oils in food safety.

All four recommend the experience to other students. Goode says, "Don't be intimidated. You never know what talents you have that can make an impact on science or your community."

"You don't have to be brilliant," said Feaster. "But you do have to be dedicated, and you have to have passion."

The SAES is part of a trend toward undergraduate research in universities across the country. The Council for Undergraduate Research reports that its membership among universities and even community colleges is growing. The A&T administration is also moving forward with plans to establish an Office of Undergraduate Research to serve students in other schools.

Cooperative Extension puts global spotlight on A&T … and global warming

THE COOPERATIVE EXTENSION PROGRAM at A&T's coordinator for family resources management and youth development programming, Dr. Claudette Smith, led a team of A&T faculty in planning, proposing and presenting the first-ever 4-H National Science Day experiment to originate at an 1890 land-grant. The A&T team's proposal for a 4-H_2O Experiment that was conducted by young scientists across the country and around the world on 4-H National Science Day, Oct. 6, beat out proposals from land-grant institutions across the U.S. for $20,000 in prize money. Dr. Stephanie Luster-Teasley of A&T's School of Engineering and Dr. Gregory Goins of the Department of Biology were also part of the team that developed the experiment, which demonstrated to young scientists how acidity generated by carbon dioxide affects water, and the ozone layer in earth's atmosphere.

"The point of the experiment was to educate kids about the impact of carbon dioxide on global warming and climate change," says Smith.

National 4-H Council used a special website to make kits available which had all the ingredients for up to 15 young scientists to conduct the 4-H_2O experiment. Website resources also included promotional materials for 4-H agents and volunteers to use in recruiting youths for National Science Day activities, including a how-to video explaining the experiment that was underwritten by Toyota.

When 4-H National Science Day arrived on Oct. 6, the 4-H_2O experiment was conducted at more than 400 gatherings in 276 counties across the United States alone. In North Carolina, there were approximately 3,000 young scientists participating in activities that guided them through the experiment, which was developed to demonstrate the negative effect that excessive carbon dioxide is having on aquatic organisms in lakes, streams, rivers and oceans, and what can be done to reduce this impact. The three North Carolina counties that led the way in 4-H_2O participation were Richmond, Mitchell and Iredell, with 650, 357 and 278 young scientists participating, respectively. Another good-sized 4-H_2O gathering was at the Alumni-Foundation Event Center on the A&T campus, where nearly 270 Guilford County fifth graders were guided through the experiment by Smith and the other members of the A&T faculty who developed it.

Gov. Beverly Perdue threw the weight of state government behind the effort by signing a gubernatorial proclamation designating Oct. 6 as "4-H National Youth Science Day in North Carolina." The annual 4-H National Youth Science Day is part of a 4-H campaign to help prepare a million new young people to excel in science, engineering and technology fields by 2013.

1) *Dr. M. Ray McKinnie, associate dean and administrator for The Cooperative Extension Program at A&T, was among the volunteers guiding nearly 270 Guilford County fifth graders through the 4H_2O experiment at the Alumni-Foundation Center at A&T.* **2)** *An IBM volunteer guides a student through one of the steps in the experiment. IBM also contributed a computer-based activity that taught children how to reduce their carbon footprints.* **3)** *The young scientists in Greensboro observing how excessive CO_2 in the atmosphere alters oceans and can harm aquatic life were at one of more than 400 reported experiment sites — with sites in 47 states, Guam, South Korea and even one in Antarctica reporting.* **4)** *Dr. Stephanie Luster-Teasley, an assistant professor of engineering at A&T, was part of the team that developed and then demonstrated the 4H_2O experiment on National 4-H Youth Science Day.*

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North Carolina A&T State University School of Agriculture and Environmental Sciences Newsletter
Produced by the Agricultural Communications and Technology Unit

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